



CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

# NEWS RELEASE

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

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## **OEHHA Study Shows Possible Link Between Traffic Pollution, Children's Respiratory Symptoms**

Even in an area with good regional air quality, air pollution from nearby traffic may pose a health risk, according to a recently completed study by scientists from Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) that shows a possible link between air pollution from nearby traffic and respiratory symptoms in children.

The study, which involved air monitoring and a health survey of about 1,100 students at 10 Alameda County elementary schools located various distances from major roads, found moderately higher rates of asthma and bronchitis symptoms (such as wheezing and excessive phlegm) in children residing and attending school in neighborhoods with higher levels of traffic-related air pollution. Scientists from OEHHA and the Lawrence Berkeley National Laboratory collaborated on the study, which was published in the September 1, 2004 issue of the American Journal of Respiratory and Critical Care Medicine.

In addition, a recent companion study by scientists at OEHHA and the state Department of Health Services found that about 150,000 California students (about 2.5 percent of students statewide) may be attending schools located close to roads with very high traffic levels (more than 50,000 vehicles/day). That study was published in Environmental Health Perspectives in January 2004.

"Our studies underline the importance of California's continuing efforts to reduce motor vehicle emissions," OEHHA Director Dr. Joan E. Denton said. "There is a growing body of evidence that children exposed to high levels of traffic pollution may be more susceptible to asthma and bronchitis symptoms."

In the respiratory health study, which took place during the 2000-01 school year, Berkeley Lab scientists measured concentrations of several traffic-related pollutants (including particulate matter – or soot - and nitrogen oxides) outside 10 schools in an area between Oakland and Hayward. OEHHA scientists used questionnaires, completed by participating students' parents, to collect health and demographic information on nearly 1,100 third, fourth and fifth graders at the schools. The school locations were assumed to be representative of the

children's overall exposure to traffic pollutants, as most of the students live in neighborhoods close to their schools.

Although a number of studies (primarily in Europe) have reported links between residential proximity to busy roads and respiratory health effects, few have actually measured pollutant concentrations in areas near busy roads. In fact, OEHHA's study was the first in the United States to evaluate the relationship between measured levels of traffic-related pollutants and respiratory symptoms.

The study found that the prevalence of asthma and bronchitis symptoms were about 7 percent higher in children in neighborhoods with higher levels of traffic pollutants compared with other children in the study. The study was not designed to determine whether traffic pollution causes new cases of asthma, but instead whether traffic pollution is associated with the likelihood of symptoms in children with existing asthma.

"It was important to perform this kind of study in California, because we have a different mix of motor vehicles and different land use patterns than in Europe. We could not assume that the European study results automatically apply to California and other states," said Dr. Bart Ostro, an OEHHA scientist and one of the study's co-authors.

"The Bay Area was a good location for the study because it has relatively good regional air quality," Ostro said. "That makes it easier to evaluate the specific effects of air pollution from nearby traffic."

In the companion study, OEHHA and DHS researchers used databases from the Department of Education (CDE) and the Department of Transportation to evaluate the proximity of almost 7,500 California public schools to freeways and busy roads. In light of previous studies that have found traffic pollution levels to be higher within 500 feet downwind of major roads, the study estimated the number of schools within 500 feet downwind of roads with traffic volumes exceeding 25,000 vehicles per day and 50,000 vehicles per day.

The study found that about 2.3% of public schools (about 170 schools) enrolling about 150,000 students are located within 150 meters (500 feet) of roads exceeding 50,000 vehicles per day. An additional 7 % of public schools (about 530 schools) enrolling about 570,000 students are located within 500 feet of roads with 25,000 to 50,000 vehicles per day.

Furthermore, using school demographic data and 2000 census data, state scientists found that schools located closer to high-traffic roads had higher percentages of African-American and Hispanic students compared to the schools having no busy roads nearby. The schools located near high-traffic roads also had higher percentages of socioeconomically disadvantaged students (such as

those receiving free/reduced price school meals or who are English language learners).

A school's location near a busy road does not always mean children will be exposed to high levels of traffic pollution. Other factors that influence this include whether the school is upwind or downwind from the road, and the school's ventilation system.

The preliminary results of the two studies formed part of the scientific basis for a 2003 state law (Senate Bill 352 by Senator Martha Escutia) that limits the construction of new schools near busy roads.

An abstract of the children's respiratory health study is available online at <http://ajrccm.atsjournals.org/cgi/content/abstract/170/5/520>, and hard copies of the study can be obtained by contacting OEHHA. The statewide school survey is available online at <http://ehp.niehs.nih.gov/members/2003/6566/6566.pdf>.

OEHHA, DHS and the Air Resources Board have prepared fact sheets on traffic-related pollutants for school personnel and parents that are available at [http://www.oehha.ca.gov/public\\_info/facts/trafkids.html](http://www.oehha.ca.gov/public_info/facts/trafkids.html). The schools fact sheet recommends practices that schools near busy roads can follow to maintain healthful indoor air quality for students, such as limiting the idling of vehicles in parking areas, purchasing low-emitting school buses, and using high-efficiency filters in their heating, ventilation and air conditioning systems. The parents fact sheet contains suggestions for reducing exposure to traffic pollutants. These include: do not leave your car idling in the garage, avoid standing near idling motor vehicles when possible, and, for families who live close to busy roads, close doors and windows during peak traffic hours and set the air conditioner on "re-circulate."

OEHHA received \$600,000 in state funding to perform the two studies. OEHHA recently received \$216,000 in additional funding from the Air Resources Board to conduct a follow-up study involving additional analyses integrating traffic and air pollution data.

*The Office of Environmental Health Hazard Assessment is one of six entities within the California Environmental Protection Agency. OEHHA's mission is to protect and enhance public health and the environment by objective scientific evaluation of risks posed by hazardous substances.*

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